

# CANADIAN GEOGRAPHICAL JOURNAL

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PERIODICAL  
READING ROOM



Colour photograph by W. V. Crichton

## SCREECH OWL

The Eastern Screech Owl (*Otus asio naevius*) is the only small Canadian owl with ear-tufts or horns. Its call is a long, tremulous wail rather than a screech, with a variety of low croons. Screech owls are found in most parts of temperate North America.



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As one of its major activities in carrying out its purpose, the Society publishes a monthly magazine, the Canadian Geographical Journal, which is devoted to every phase of geography — historical, physical and economic — of Canada, of the British Commonwealth and of the other parts of the world. It is the intention to publish articles in this magazine that will be popular in

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# Ontario's Mineral Heritage

by L. CARSON BROWN\*

**T**HE STORY of the Toronto Stock Exchange with the ordered bedlam of its trading floor, its ribbons of ticker tape and its instantaneous connections with brokerage offices and other exchanges throughout the world, began two billion years ago. It was then that Earth began the evolutionary processes which stored in the rocky crust of Northern Canada mineral wealth which forms the hard core of today's trading on the mining floor of the Exchange.

The warm, friendly disposition of the people notwithstanding, nature has seen to it that much of Canada's immense land mass must be counted among the earth's less hospitable areas. A large part of the country has a winter climate from which not even native Canadians derive much joy. The most westerly province has a face marked by age-old wrinkles—high mountain ranges interspersed by comparatively narrow valleys of varying fertility.

The Great Central Plain which includes Canada's three Prairie Provinces serves as one of the world's great bread baskets. Yet even here, there are some areas which have succumbed to years of unremitting cultivation, and which a radical change in agricultural methods alone will save from something approaching desert conditions. The Eastern provinces for the most part are rocky and capable of supporting only a limited population.

Generally speaking, even that part which comprises the central provinces of Quebec and Ontario is capable of intensive cultivation only in the southern region, and the rest, if we except such fertile areas as the two Clay Belts, is a vast circle of bare rock, or rock covered to a depth of only a few inches or a few feet, extending in a great horseshoe around Hudson Bay, comprising at least two-thirds of the total area of the country.

It is an astonishing fact that, in spite of its great size, Canada now has less ground under agricultural cultivation than has, for example, France.

Canada is a country of challenge and, on the

face of it, one whose appeal as a potential home is to the stout-hearted. The challenge is strong—and the rewards, based on a sober assessment of the country's still undeveloped resources, may be stupendous.

How has this nation already risen from its original colonial status—"These wretched colonies" of Disraeli's day—to a position of complete independence within the Commonwealth, a leader among the so-called "Middle Powers"? And how, in pace with its growing political prestige, has Canada's economic strength increased to the point where its people now enjoy a standard of living comparable to that of the world's mightiest nation, and the volume of its exports makes it the world's third greatest trading power? And how has its population, trebled since the turn of the century, now reached a happy, prosperous 15 million?

There are many reasons, and among them some of the soundest will be found in Northern Ontario's belt of Precambrian rocks, part of the Canadian Shield—a rocky barrier which for generations was the frontier wall between the civilization of the South and the unknown wilderness beyond. This area includes nearly all the province except a triangle south of a line drawn from the east end of Lake Ontario to the tip of Georgian Bay; another between the valleys of the St. Lawrence and Ottawa Rivers east of a line between Arnprior and Brockville, and still another band in the far north encircling James Bay and stretching west to the Manitoba boundary.

## Two Billion Years of Building

It was in that Precambrian region two billion years ago that Nature began the series of upheavals which contorted the face of the earth, and deposited the mineral wealth which, perhaps more than any other resource has made Ontario the wealthiest province of Canada, and Canada one of the most economically favoured nations of the world.

Geologists have traced the story of this

\* Director of Publicity, Ontario Department of Mines.



planet right back to the dawn of its birth when it was a seething globe of gases and liquids tucked away in a small corner of the universe. Eventually as this gaseous mass cooled, a crust formed on the surface and thickened with the passing of centuries. The settling of heavier matter in the molten mass of the earth's core caused surface pressures to change, and the brittle crust cracked and heaved into jumbled masses to form mountains.

These cracks or faults in the earth's weakened shell allowed some of the molten rock materials and gases from deep within the earth to come toward the surface. With them they carried the metals and other minerals which remained in the cracks and fissures after the molten masses had cooled and become solid. Thus were formed the mineral deposits which now, millions of years later, are enriching this province and this nation—and without which civilization, as we know it, could not exist.

These periods of vulcanism and mountain building were repeated over and over again during the millions of years which followed. In time the mountains were worn down, but again pressure inside the earth caused more volcanoes to erupt; more mountains were built, and more molten masses laden with minerals filled up the fissures in the earth's crust. The sea advanced and retreated several times over the land area which is now Ontario, and deposited layers of sand, clay, and limestone.

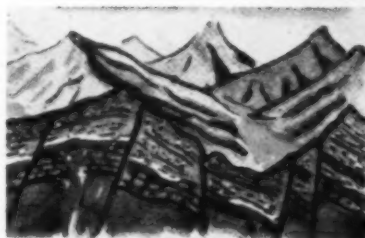
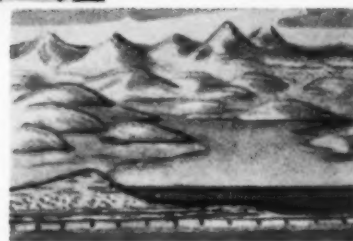
It was just about a million years ago—only yesterday in the geological calendar—that the northern part of this continent became intensely cold and great ice sheets crept down to the Great Lakes. Rock debris, the accumulation of aeons of building and decay was ploughed ahead by the creeping sheets of ice. As the glaciers gradually melted, the masses of rock, sand, and mud were dropped and formed dams to block the drainage from the melting ice. Thus it is that so much of Northern Ontario as seen from the air, is made up of wonderfully blue lakes and winding rivers. By the time the ice mass had reached Southern Ontario the deposit left there was principally in the form of fine rock "flour" containing the minerals needed to promote vegetable growth, the nucleus of the rich agricultural land with which the

*First the earth was a seething globe of gases.*



*Mountains were formed and lava flowed.*

*The mountains were gradually worn down.*



*Molten masses carrying minerals filled the fissures.*

*A great ice sheet crept down to the Great Lakes.*



southern part of the province is blessed. Meanwhile, as the ice cap scraped along on its way southward it uncovered mineral-bearing rocks in some places, and in others buried mineral deposits under a great depth of glacial soil.

So much is past history, written by nature on the scarred face of the earth ages before the first man appeared.

Still being written is the history of the discovery, the development, the recovery, and the use of the mineral deposits which were banked and marked to the credit of mankind so long ago.

### Early Mining History

Although there were discoveries and some development earlier, virtually all of the total production from Ontario's mines has been concentrated in the last sixty years. That is, well within an average lifetime we have seen a gigantic industry develop almost from scratch to produce more than eight billion dollars in new wealth. The rate of annual production has

been climbing spectacularly, particularly since 1946, so that the end of 1954 saw an all-time record established which promised to exceed half a billion dollars in that year alone.

In the comparatively short story of Canadian civilization, the history of mining goes back almost to the beginning . . . all the way to 1604 when a mining engineer in Champlain's company reported a discovery of iron and silver in



*Successors of the pioneer prospectors are these men who today carry on the building of Ontario's great mining industry—a bush pilot, an engineer, and two prospectors. Their mining camp is in the Blind River uranium belt.*

Dept. of Mines



Nova Scotia. The first recorded mining activity in the present province of Ontario was in 1770 when a group of Jesuit missionary-explorers conducted experiments with native copper on the north shore of Lake Superior. In the same year Alexander Henry, an English trader formed a company with the Duke of Gloucester and other prominent Englishmen to develop minerals near Sault Ste. Marie.

These, however, were abortive ventures which did little more than indicate that there were certain minerals in the primitive wilderness which might conceivably be developed at some time in the future.

During the next hundred years there were a number of other developments, some of considerable importance, some rather transitory in their significance. Among these could be mentioned the construction and operation of blast furnaces at Normandale in Norfolk County, and at Marmora in Hastings; the inauguration of the first gypsum mining operation in the province near Paris and the opening of the first gypsum mill; from North Burgess Township the first commercial shipments of apatite in Canada, and the production of salt near the Maitland River and at Seaforth.

In 1866 there occurred two events of more than passing importance. One was the discovery of gold near Madoc—just about the first indication of the great wealth of the

Canadian Shield. The other was the discovery by Thomas McFarlane of the riches of Skull Rock, a tiny dot not far from Port Arthur in Lake Superior, which, because of its phenomenally rich silver veins, was re-named Silver Islet.

The story of the fight to wrest its treasure from this rock, in the face of fire and underground explosion is an epic in itself. The fight was so successful that before the operation was finally abandoned in 1884 after the ice floes of the inland sea had completely wrecked the surface structure and flooded out the mine, Silver Islet had yielded up more than three and a half million dollars in silver, of which some ore assayed better than 2,000 ounces to the ton.

Until 1843, mining activities in Canada had been conducted on a free-and-easy basis. There was little control and less guidance of the few enterprising prospectors whose faith was sufficient to carry them into the unknown in search of the wealth which they thought might lie hidden there. In that year the Geological Survey of Canada was instituted under the direction of William Edmond (later Sir William) Logan. The geological data and maps which have been compiled in the ensuing century under the aegis of this extremely important government department, might justly be described as an index to practically all that is known of the nation's mineral potentialities.





*The International Nickel Company operates this giant smelter at Copper Cliff.*

#### Discovery at Sudbury

Thirteen years after Confederation the government of the infant Dominion of Canada virtually risked bankruptcy when it undertook to construct a railway to link up the almost-unpopulated area of the Northwest Territories formerly controlled by the Hudson's Bay Company with the older, more settled south-eastern regions. Although there were grave doubts that so monumental a project could ever be self-sustaining, construction of the line was the *sine qua non* of British Columbia's entry into the union.

The Canadian Pacific Railway Company was incorporated to carry out the contract and the first bonus on the gamble was paid just three years later. It was surely one of the most

profitable mistakes in history that led the railway's location engineer to run the line north of Lake Ramsey instead of to the south as had been intended. About three miles beyond the present site of the city of Sudbury—then little more than a temporary construction camp—a blacksmith, Tom Flanagan, noticed a ridge of heavily stained rock. He chipped and dug at the rock and a few inches down came upon a blue copper stain. The grading crew subsequently cut through the ridge and uncovered a considerable deposit of mineralized rock.

There is no record that Flanagan derived any material benefit from his discovery, but a few months later application to purchase the land was made to the Ontario Department of Crown Lands by Thomas and William Murray of Pembroke, Henry Abbott of Brockville and John Loughran of Mattawa.

The Murray mine was in the making—and with it the foundation was laid for one of the world's mighty industries.

In fact the Murrays and their partners never did bring the mine into production and the first actual mining operations were carried out six years later by H. H. Vivian and Company of Swansea, Wales, who purchased the property. The Vivians failed but the subsequent owners succeeded in developing an extremely important deposit of copper and nickel. Other discoveries during the next few years resulted in the establishment of such

*A three-boom Jumbo ready to drill the face of a drift. There are three rock drills on the end of the booms.*

Editorial Associates Ltd.





## ONTARIO'S MINERAL HERITAGE

other famed nickel-copper producers as the Frood, the Copper Cliff, the Creighton, the Stobie, the Levack and the Garson Mines.

The Sudbury Basin has been growing in importance ever since, so that now it is the source of 85 per cent of the free world's known output of nickel, almost half of Canada's total copper production, and it is the world's largest producer of platinum. Altogether, each year the Basin provides more than half of Ontario's total mineral production.

It was ironical that the very richness of the nickel content of the Sudbury ores was for years the greatest handicap to the development of mines in the area. The search in the early years was for copper and the market for nickel was almost non-existent. Yet the separation of the nickel constituent of the ores from the more desired elements presented a problem which baffled metallurgists for several years.

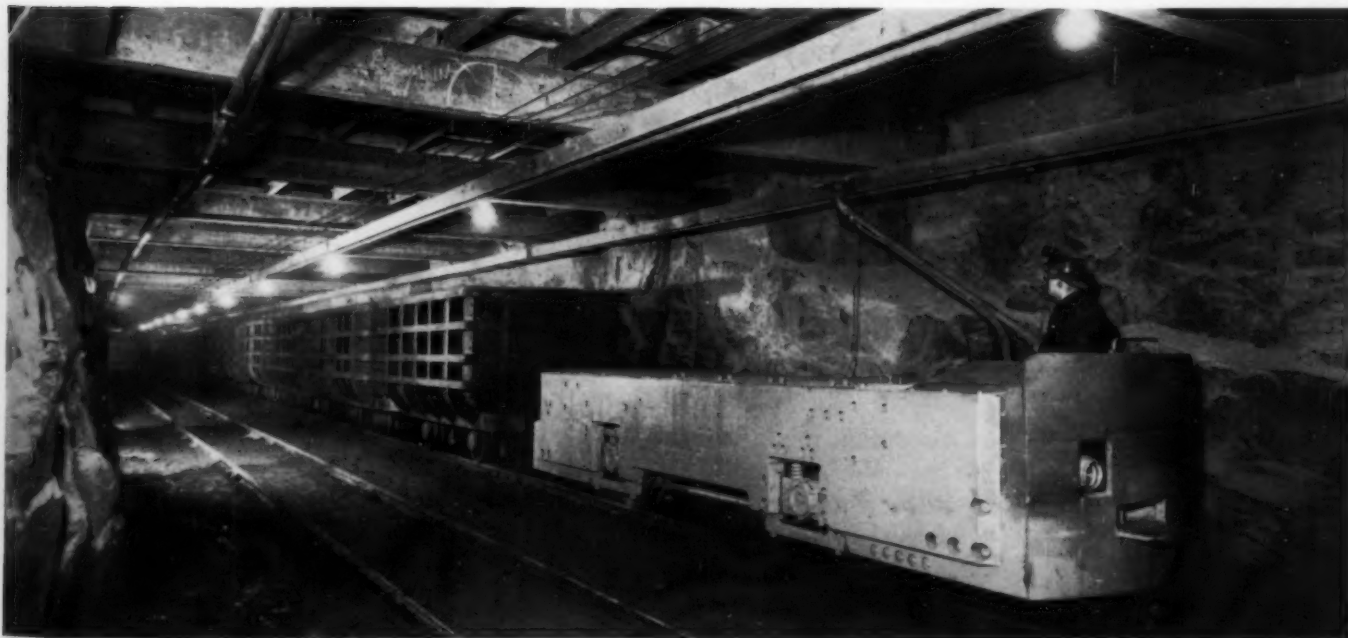
In 1892, however, two different solutions to the problem were disclosed. Col. R. M. Thompson announced that he had fully developed the Orford process of nickel-copper separation and Dr. Ludwig Mond announced the perfection of the process which still bears his name.

As has been the case with many other amenities of peaceful existence, a war was needed to

reveal the vast importance of Sudbury's nickel deposits. The years between 1914 and 1918 revealed in full measure the value of nickel as a steel-hardening alloy for plating battleships and tanks, and as a steel-piercing medium when used on the nose-caps of shells and rifle bullets. As distinct from its martial purposes, peacetime uses of nickel are now so numerous that it has become one of the world's truly essential elements.

In 1953 the International Nickel Company of Canada made an announcement of major importance to Ontario's mining industry and to the whole Canadian economy. It was to the effect that the company's metallurgists had evolved an entirely new process through which it is planned to extract as much as a million tons of high-grade iron oxide every year from the indigenous nickel-copper ores of the Sudbury Basin. The first unit of the plant which had to be constructed for this purpose cost \$16,000,000. Not only will this iron ore in itself represent a contribution of major importance to the province's production total; but its presence will greatly enhance the value of the nickel-copper ores and will make it possible to mine material of marginal grade which would otherwise be left in the ground.

*Trains like this operate over the 120-odd miles of underground track laid in the five operating mines of the International Nickel Company in the Sudbury area. Altogether the underground development in these mines totals more than 350 miles.*





*Silver Miller Mines at Cobalt in 1952.*

G. M. Dallyn

### **The Cobalt Boom**

The discovery of silver and cobalt at Cobalt in 1903 was in many respects an astonishing parallel to that of nickel and copper at Sudbury twenty years earlier. Both were made purely by accident, both by men engaged in the construction of a pioneer railroad. In both cases the mineral which attracted attention first was later relegated to a position of secondary importance by another component of the ore, and in both cases the separation and disposal of this second valuable mineral provided a difficult problem of metallurgy.

At the turn of the century there were a few hardy farmers breaking ground in the rich clay belt north, east and west of Lake Timiskaming. Their centres of population were the villages of New Liskeard and Haileybury. The Hudson's Bay Company had a trading post a short distance to the east and a certain amount of timber was being taken from the heavy forest and floated down Lake Timiskaming to the headwaters of the Ottawa River. That was all. There was no hint of the mineral bonanza which lay waiting. In C. C. Farr, a former factor of the Hudson's Bay Company and the founder of Haileybury, the Little Clay Belt had a strong protagonist. As the result of the campaign which he conducted, the Ontario government sent in experts to assess the agricultural possibilities of the region. So favourable was their report that the government decided to finance the construction of a railroad from North Bay to open up the country for full

development of its agricultural possibilities and of its timber resources.

The line inched northward, skirting lakes, spanning rivers and blasting through rocks. At mileage 103 it passed directly over rich silver veins, and there came the discovery that was to make Cobalt a household word throughout Canada and the whole mining world.

Credit for the find belongs to J. H. McKinley and Ernest Darragh, two tie contractors employed by the railway. They noticed metallic particles in the rock-cut and sent samples to a Montreal chemist for assay. The report came back—4,000 ounces of silver to the ton, among the richest mineral concentrations ever recorded. The partners staked Cobalt's first mining claim and the McKinley-Darragh mine was in the making.

Fred LaRose, a legendary figure in Cobalt's history, made his famous find six weeks later. The story is that LaRose, a blacksmith employed by the railway threw his heavy hammer at an inquisitive fox. LaRose's aim was not too good and the fox escaped but the hammer broke off a chunk of rock to reveal a vein of glistening silver—the foundation of the LaRose Mine which is still an important producer.

The Ontario Bureau of Mines lost no time after the first discovery was reported in sending the provincial geologist, Dr. Willet Green Miller to the scene. Miller, a conservative scientist, was astounded by what he found, and his subsequent report was probably one of the most optimistic ever written by a geologist—a

race of men not given to flights of fancy. Canadians of that day, however, were not prone to enthuse over mining possibilities, and some of them had been smitten previously by investment fever with unhappy results.

But the apathy of the mining world ended abruptly the following year when cheques for the first ore shipments began to roll in. Sound financing soon made itself felt in the life of the Cobalt camp. The brothers Jules and Noah Timmins, W. G. Trethewey, Alex Longwell, the McMartins, the O'Briens and others, stepped in and the rush was on in earnest.

The years that followed were as full of the romance, glamour, quick fortune, and sudden heartbreak for the people of the mushrooming town of Cobalt, as have ever been experienced in any mining camp in the world.

The depression years of the "thirties" came at the worst possible time for Cobalt. The precarious condition of world finances, coupled with the fact that the richest of the ores then appeared to be running out would have been enough to quell any but the stoutest hearts. The whole world, except die-hard Cobalters knew that the boom-town of Cobalt was no more, that it was destined to be one of the first ghost-towns of Ontario's mining history.

The faith of the few against the scepticism of the many was justified a few years later, but the justification called for something approximating a technological revolution.

From the beginning, silver had monopolized the interest in the silver-cobalt ores of the dis-

trict. The first need was to separate the two components, but the cobalt, once separated, was treated as waste and discarded. A new era dawned for the Cobalt camp with the development of the first uses for the cobalt element. Since then, mines have re-opened, new mines have been started, a new laboratory has been established to treat the native ores, and the old Town of Cobalt has been given a new lease of life—life without the flamboyance of earlier years, but one in which there is sturdy confidence in a long and happy future.

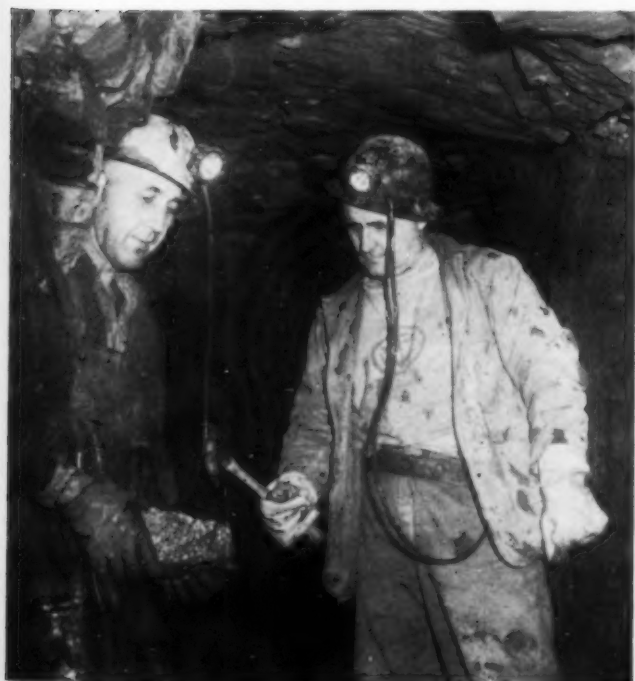
The mineral cobalt has become one of the world's most versatile elements. As an oxide it has been widely used in the enamel, porcelain and ceramic industries since earliest times. As an extremely hard alloy with chromium (stellite) it is used in the production of cutting tools. Because of its heat-resisting capacity it is essential in the manufacture of jet engines for supersonic aircraft. The cobalt therapeutic unit (the cobalt bomb) is now in use in many hospitals to aid the fight against malignant cancer. Cobalt, in minute quantities, is now added to cattle feed to produce sleek calves. It is used in the manufacture of nylon hosiery for the same purpose. The new uses which are being found for it, almost every day, give ample assurance that the world supply of cobalt is not likely to exceed the demand for a great many years to come.

In the first 33 years of its active life, the Cobalt camp shipped 1,096,500 tons of ores and concentrates. The total silver production exceeded 380,000,000 ounces valued at more than \$230,000,000. More than \$95,000,000 was distributed in dividends. To ship the ores and bullion extracted from the mines of Cobalt in that period would require a train of freight cars nearly a hundred miles long.

Great though the actual production of the camp was, that in itself, was not the greatest contribution which Cobalt made to the mining industry and to Canada's economy. Cobalt's greatest single gift lay in the impetus it gave to prospecting and developing the vast mineral resources which still lay unrevealed throughout the breadth of the province and farther afield. It awoke in Canadians a realization of their unsuspected heritage.

*Two miners examine a specimen of massive cobalt ore taken from the fourth level of a mine that stretches far beneath the waters of Lake Timiskaming.*

Dept. of Mines







### The Gold Camps

The first important Cobalt-bred development, apart from extensions of the Cobalt field into Gowganda and South Lorrain, came in 1909 when Harry Preston, one of three prospectors working southwest of a body of water known as Porcupine Lake, slipped on a steep hillside, and in doing so scraped the moss from the underlying rock exposing a ledge of quartz. They followed the 21-foot wide ledge to a dome-shaped structure which was literally studded with gold. Their find became the world-famous Dome Mine.

Two other prospectors, Benny Hollinger and Alex Gillies, came on some promising property west of the lake, and in friendly competition tossed a coin to see how the claims should be divided. Hollinger won the toss and the six claims he selected became the nucleus of the great Hollinger mine. About the same time, Sandy McIntyre and his partner staked out four claims a short distance to the east. On these was built McIntyre Mines Limited, one of the great gold producers of Canada.

It was the irony of fate that both Hollinger and McIntyre had been grub-staked by others who were in effect their employers. Thus, apart from a few thousand dollars, all that either of them received as a reward for the finds was the intangible glory of having their names connected with the financial monuments which they founded.

The Hollinger mine was taken over by the Timmins brothers and their associates who had already reaped large fortunes at Cobalt. Still, even with the Cobalt fortunes as a backlog, for a long time it was questionable if the resources were sufficient to meet the terrific expense involved in establishing a major mining enterprise. Hollinger Consolidated Gold Mines Limited now has interests in a great many mining enterprises throughout Canada, including the immense new iron ore development

*Top:—Buildings of the Kerr-Addison mine which has the greatest daily milling capacity of any Canadian gold mine.*

G. M. Dallyn

*Middle:—The headframe of the Hollinger Mine, one of the giants of the Porcupine.*

Nott and Merrill

*Bottom:—Lake Shore Mine, in the Kirkland Lake camp.*

G. M. Dallyn



*An aerial view of the famous McIntyre Mine at Schumacher, one of the great gold producers. The town lies across the lake.*  
R. O. Jennings



in Labrador and Quebec. Thus it can be seen that the fortune in silver, spawned at Cobalt half a century ago is continuing to pay dividends throughout the whole complex of Canada's mining industry.

So far, the Porcupine gold zone has produced well over a billion dollars. There are at present thirteen producers in the area. Although some others have closed down either temporarily or forever because of diminished ore reserves or the increasing cost of production in the face of the rigid \$35 per ounce price for gold set by the International Monetary Fund, some of the mines still in operation have reached a depth of more than a mile and the ore values continue to hold, and in some cases to improve at depth. Thus it appears safe to predict a long life of continuing prosperity for Timmins and the other three towns of the Porcupine Camp.

Another chapter in Ontario's mining history was started one summer day in 1912 when a prospector, W. H. Wright, uncovered a streak of yellow gold a few miles east of Swastika station. The famous Wright-Hargreaves mine was in the making.

Hard on Wright's heels came Harry Oakes and the Tough brothers who staked the Tough-Oakes claims. Then, later, Oakes made another discovery west of the Wright-Hargreaves and the Lake Shore Mine was on the way.

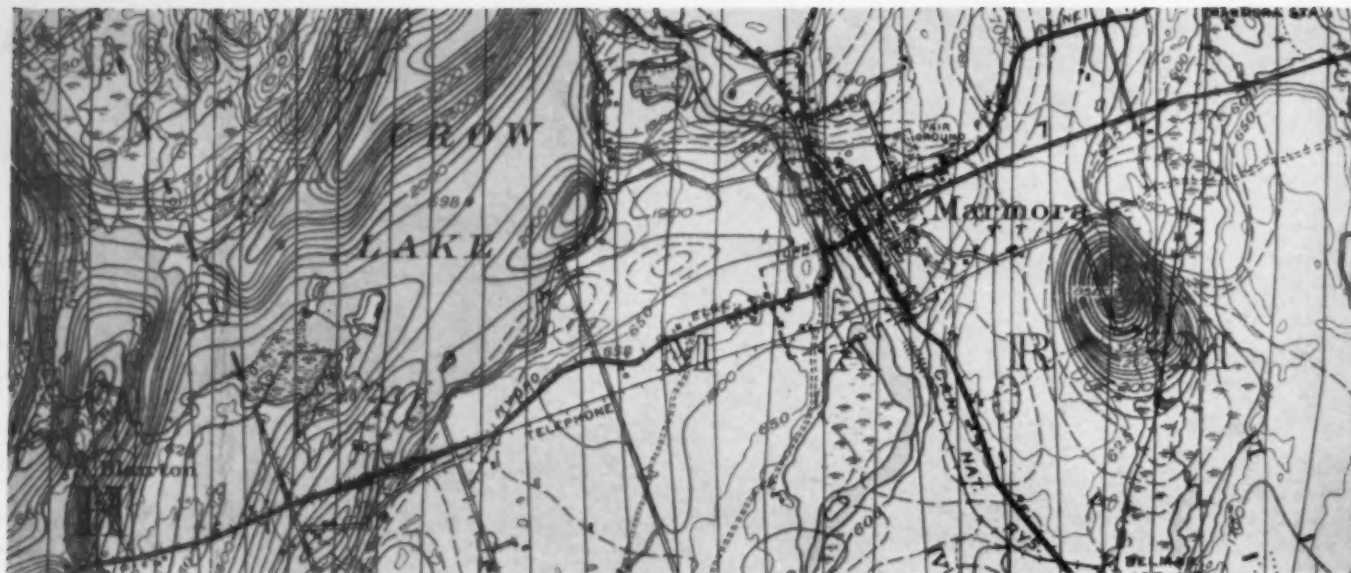
After the first spurt, the town of Kirkland Lake (named after a secretary of the Ontario Government Surveys Branch) stood still for a

time—perhaps waiting to see if the rich gold discoveries were a flash-in-the-pan, or if they would hold at depth. Lake Shore gave the answer. Down went the shaft, a thousand feet, three thousand feet, a mile, without diminution of the richness of the ore. Doubters were silenced, and the rush was on in earnest. The population swelled to 5,000, to 10,000, to 20,000. There are seven active mines in the Kirkland Lake Camp, and the area has produced more than \$620,000,000 in its brief life.

Even before the Kirkland Lake strike, gold had been reported farther east at Larder Lake, but nothing much ever came of it and the place seemed destined to remain a shadow town. However, two or three mines finally began to show signs of success and in 1938 the Kerr-Addison was established on the amalgamation of several properties. This giant now has a daily milling capacity greater than any other gold mine in Canada including the Hollinger and the Lake Shore.

In the following years Ontario saw many other discoveries of gold throughout the whole breadth of the Canadian Shield. New and flourishing mining camps sprang up at Red Lake in the far northwestern part of the province, in the Geraldton-Long Lac region, and elsewhere. Most of them are still contributing generously to the Canadian economy.

Altogether the gold mines of Ontario have produced more than two and a quarter billion dollars in new wealth.



*Aeromagnetic data superimposed on a topographic map which pointed up the deposits of magnetite in the area of Marmora.*

Section of aeromagnetic map series, Dept. Mines and Technical Surveys

### Growth of the Iron Industry

The spotlight swings now from gold to base metal. It is only in recent years that iron mining has assumed a place of importance in Ontario's prolific mining family. But it is a lusty infant which promises to outweigh many of its older relatives in size and in its impact upon the national economy. The record of iron as a major factor in the mining picture dates only from 1938 when rich hematite ore was discovered at Steep Rock Lake, 142 miles west of Port Arthur.

In 1899, it is true, production of iron ore had

been begun at the Helen Mine in the Michipicoten Range, northwest of Sault Ste. Marie and a large smelter was in operation in that city. The value of the ore shipments was a vital contributory factor in the decision to build the Algoma Central Railway. But in 1918, the apparent diminution of commercial ore led to the closing down of the mine. The operation was resumed in 1939 and since then the Helen Mine has produced more than 10,000,000 tons of sinter worth some \$50,000,000. Enough ore has now been outlined at the Helen Mine and the adjoining Victoria Mine to assure continued production at the present rate for at least the next twenty years, and the company holds other property in the same range for development when required.

The first iron ore was taken from the famous Steep Rock mine in 1944, but the story leading up to that goal is an epic of geological detective work, prospecting ingenuity, resolute courage in the face of difficulties, and of engineering skill on a magnificent scale.

The story of all that happened after the discovery of a boulder containing hematite in 1890, and the tracing of the orebody to the bottom of Steep Rock Lake cannot be told here at any length nor can that of the early, unsuccessful attempt to reach the deposit through a shaft sunk under the lake.

Finally came the bold conception of a plan to empty the entire lake, a body of water seven square miles in extent and of unusual depth. The first step in the project was the diversion

*Since the lake was pumped dry, Steep Rock Iron Mines yield well over a million tons of high grade iron ore every year.*



*A general aerial view of the Marmora iron mining operation which gives an impression of the size and depth of the open pit. Note the network of roads which have been laid for the giant trucks that carry away the waste limestone, and deposit the ore in skips to be conveyed up the inclined ramp, shown at the extreme right, to the mill.*

H. Oakman



of the Seine River, and this in turn called for the building of fifteen miles of roadway over rugged terrain and the construction of camps to accommodate a thousand workmen.

Then, with the main inward flow diverted, came the truly monumental task of pumping out 100 billion gallons of water from the lake. In December 1943, fourteen huge pumps began spewing out 300,000 gallons per minute on a night and day basis. By the following May, the bottom was exposed and the lake was divided into two parts by a ridge-like structure in the middle. Before actual mining operations could begin, it was still necessary to remove the silt layer which varied in thickness from a few feet to more than 100 feet. Two giant dredges, equipped with great suction pumps and water nozzles, went to work, and millions upon millions of cubic yards of silt were removed from the site of the operation.

Meanwhile at Port Arthur work was proceeding on a big ore dock ready for the first shipment from Steep Rock. The original unit was 600 feet long but in 1953 the C.N.R. constructed an addition which doubled its length and capacity. The dock will now accommodate eight ore ships simultaneously and has capacity for 60,000 tons of ore. Another greatly-needed asset to the mining operation was provided the following year when the Prime Minister of Ontario formally opened a new highway from Atikokan to the Lakehead.

Both open-pit and conventional underground techniques are being used to mine the iron ore

from two orebodies at Steep Rock, and the annual production, now about 1,500,000 tons, is capable of considerable expansion.

Another orebody in the same range has been leased to a large United States corporation. The terms of the lease are based on the anticipated annual production of at least 3,500,000 tons from this body alone. The new mine is expected to start shipping ore about 1960 and when it does, the annual production target figure of 10,000,000 tons from the Steep Rock range will be brought much closer to realization.

The schedules for still another iron mine—this one in Hastings County in southeastern Ontario—called for first ore production in February, 1955. Although it was known for some time that iron ore could be found in that part of the country (in fact, a smelter was in operation there 130 years ago) the extent of the deposit was realized only after an airborne magnetometer survey conducted jointly by the Ontario and the federal departments of mines indicated very strong anomalies just outside the town of Marmora. Subsequent diamond drilling revealed a block of magnetite-bearing rock 2,600 feet long by 1,200 feet wide. Unfortunately, however, the orebody was overlain by a massive capping of limestone 130 feet thick. The work of stripping this cap was started in 1952 and it has been proceeding steadily, at the rate of about 700,000 tons per month, ever since. The estimated ore reserve, to be mined by open-pit operation, is 20,000,000 tons, probably subject to considerable increase.





*'Main Street', Manitouwadge. Part of the permanent camp that was under construction within a few months of the first discovery.*



*Typical of the prospectors who, in midwinter, established one of the greatest staking rushes of all time, at Manitouwadge.*

C.N.R.



#### **The Manitouwadge Discovery**

The town of Geraldton, north of Lake Superior, was built around the gold mines of the district. Due to the somewhat depressed condition of the gold mining industry it was not a particularly flourishing community in 1953 when three residents of the town made a discovery which resulted in the biggest influx of prospectors and interested mining men which had been seen anywhere in Ontario since the days of the Cobalt boom.

Roy Barker was a carpenter employed by one of the district mines and his friend Bill Dawidowich was a bush foreman working for a timber company. They had one outside interest in common and both were fascinated by the geology and the mineral potentialities of the rocks around them, and whenever possible they went on prospecting trips throughout the area. They studied a report published by the Ontario Department of Mines after a visit to the little-known country around Manitouwadge Lake made in 1931 by Dr. J. E. Thomson, the assistant provincial geologist. They were impressed by Thomson's guarded reference to the indications of widespread mineralization and wanted to see for themselves. The difficulty of getting into the area presented a real problem so they approached another Geraldton man, Jack Forster, a garage operator who was a flying enthusiast and the owner of a small plane. The three entered into a partnership agreement in which Barker and Dawidowich were to supply the technical prospecting skill and Forster the transportation.

On an early trip into the area they found some promising samples which, upon assay proved to be extremely rich in copper. Then they returned to stake the ground, but found to their dismay that someone else had been there in the interval between their visits and had set up posts on the spot where the find had been made. However, they kept silent both about the find and the disappointment, and when, after the expiration of the time limit, they checked at the recording office in Port Arthur and found that the claims had not been recorded, they re-staked the ground and made the recording in their own names.

*In front of the helicopter in which he flew to the area, the Ontario Minister of Mines examines a section of drill core with the discoverers of Manitouwadge. L. to r.: Jack Forster, Hon. P. T. Kelly, Bill Dawidowich, Roy Barker.*



By that activity the trio of "weekend prospectors" made themselves millionaires overnight, set the stage for the greatest staking rush of modern times, and inaugurated a mining development which it is confidently expected will rank among the greatest in Canada's history.

The General Engineering Company to whom the three discoverers disposed of their claims advanced rapidly in its preparations for actual mining. A large permanent campsite was built on the shore of Manitouwadge Lake and a mill, capable of treating 3,300 tons of ore daily was erected. Actual production was scheduled to begin in 1957.

Incidentally every nail, every foot of finished lumber for the campsite had to be either flown in at heavy cost or, in the dead of winter, hauled by tractor train over the snow-covered hills. As will be shown, the Ontario Department of Mines acted speedily to remedy this situation.

General Engineering Company's production schedule calls for the first ore shipment in 1957 but before that date a whole new townsite has to be laid out on a plain bordering Manitouwadge Lake. It is not often that an opportunity presents itself to carve out from verdant wilderness a model community, complete with water and sewage facilities, broad streets, parks, shops, schools, homes, golf course and other recreational areas. It is, therefore, not surprising that the Ontario Department of Planning and Development sees in the Manitouwadge a rare opportunity, as it lays plans for a town to accommodate as many as 6,000 people.

#### The Uranium Rush

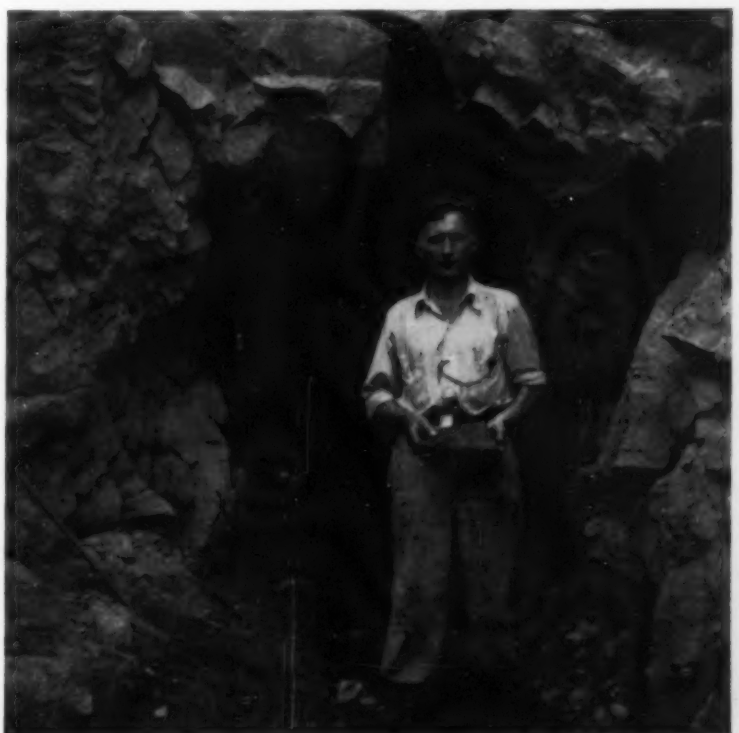
The coming of the Atomic Age with all its perils and opportunities, created a new demand and opened up an entirely new field of mining enterprise. The Algoma district, particularly the area east of Blind River, on the north shore of Lake Huron, provided Ontario's answer to the challenge. In the rocky terrain of that area, in 1952, widespread deposits of radioactive uranium were brought to light. Subsequent exploration revealed that the mineralized zone

extended along a Z-shaped line 85 miles long, embracing parts of sixteen townships. A number of Canada's foremost mining companies interested themselves in the discovery and great tracts of land were staked and leased for development. Altogether, by autumn 1954, 15,000 claims had been recorded in the area, and the activity had not begun to subside.

By that time, however, enough exploratory work had been completed to give full assurance that orebodies of major importance existed, and two companies were well advanced in the work of sinking shafts in preparation for actual production. It may well be that in the uranium field of Blind River, Ontario has what may prove to be one of the most important mining ranges in all Canada. The fact that the federal government was prepared to negotiate production contracts which might total \$250,000,000 gives some idea of the scope of the operation. As in the case of the Manitouwadge development the establishment of a completely new town was undertaken as an inter-departmental project.

During 1953 and 1954 prospecting activity in the region around Bancroft in southeastern Ontario was almost on a par with that at Blind River, and the search was for the same magic metal, uranium. Several important deposits have been discovered, and it is entirely probable that this area too is destined to experience a lot of mining activity before very long.

*Manfred Johnson, an outstanding prospector and member of the team which contributed to the first major discovery in the Quirke Lake section of the Algoma uranium belt.*





*The mill buildings at Nephton, with part of Blue Mountain in the background.*

American Nepheline Limited

#### **Nepheline Syenite**

It is probable that not many people, apart from those living in the immediate neighbourhood, ever heard of the town of Nephton. Yet this little community situated a few miles from Peterborough has grown up within the last few years to be the centre of an industry that is probably unique in the whole world of mining.

Nephton is the townsite built to house the workers who mine and treat the nepheline syenite which is found in the neighbouring Blue Mountain (a mountain by courtesy only since it is just about 350 feet high). The mine at Nephton gives Ontario a world monopoly in the production of nepheline syenite which is a compound of a number of elements including silica, alumina, soda and potash. While the mine's production (114,000 tons in 1953) does not qualify it for a major place in the Ontario mining industry, it is a soundly established and steadily growing business—and the ore reserves in the area are virtually unlimited.

*The interior of a snowmobile equipped to serve as a geophysical laboratory.*

Nepheline syenite has a wide range of uses, particularly in the ceramic industry. It is used extensively in the manufacture of glass bottles and tumblers, window glass and glass blocks, dinnerware and artware, television tubes and lamp bulbs, vitrified china for bathroom fixtures, and floor and wall tile.



### Future Prospects

In attempting to portray some of the history of Ontario's mining industry it has been possible only to touch on the highlights of the past. It has been equally impossible to do more than indicate what is likely to develop as the result of more recent activities in the field. In spite of intensive prospecting and exploration work in some regions, it cannot be said with any certainty that all the mineral resources of those regions have been pin-pointed. In other vast areas of the province there has still been little exploratory work and, geologically speaking, these areas are still virgin uncharted territory.

Mineral resources are all "wasting assets"—that is, once taken from the ground they cannot be replaced as field crops that are planted each year, or even as forests can be cut and regrown. But it is not likely that great public alarm will be felt over the fact that, eventually, most of the Precambrian rock will have been stripped of its mineral wealth. However this situation will not arise within the foreseeable future and it is made more remote by new and important discoveries which are constantly being announced.

As yet, Ontario has very few "ghost mining towns", communities built around a single ore occurrence which collapsed entirely when the ore was exhausted. Yet ore bodies do run out, and if Northern Ontario's Precambrian belt is to play its full part in this country's economy, and if it is to support the population it could support, it is evident that secondary and tertiary industries should be developed throughout the north.

Apart altogether from the great forest resources and the agricultural possibilities of the clay belts (possibilities which may come as a distinct surprise to residents of the balmier south) Northern Ontario has resources which have scarcely been touched. A case in point is the asbestos deposit at Matheson, opened up a few years ago as an adjunct to the Porcupine gold belt. Then in the James Bay Lowland, north of the Precambrian belt there are extensive deposits of gypsum which could provide

material for a considerable industry. Possibly another industry could be based on the deposits of Cretaceous clays suitable for the manufacture of stoneware goods, various vitrified products and fire brick. Other clay deposits in the same area could be used for the manufacture of retorts and crucibles, electric or sanitary porcelain, floor and wall tiles.

A few years ago the Ontario Department of Mines conducted detailed research on the extensive lignite deposits at Onakawana, in the Abitibi River basin. Although it was decided that this low-grade fuel was of insufficient value to justify its exploitation under present circumstances, it is entirely probable that science, backed by increased population and industrialization in the North, will yet come up with a solution to the problems which now preclude any extensive use of this lignite.

The one element still required to give Ontario a completely balanced mineral economy is natural fuel in quantity. Geologists know that the flat lands between the Canadian Shield and the shore of James Bay are similar stratigraphically to those of southwestern Ontario which have yielded considerable quantities of natural gas and oil. As a point of interest it might be stated that the first producing oil well on the North American continent was dug in 1858 at Oil Springs in Lambton County. The Ontario Mines Department and several private agencies have carried on some exploration in the James Bay basin, so far without success. But it is a vast area and because oil has not yet been discovered in it is no proof that it does not lie hidden in great pools somewhere beneath the surface.

Another feature of vital importance to Northern development lies in the fact that a good many of Ontario's largest rivers flow from the Height of Land northward rather than southward into the Great Lakes. These rivers drop steadily as they leave the Canadian Shield to enter the Hudson Bay basin, and the falls and rapids offer potential development for a very considerable volume of electric power. This source has been tapped, but only tapped, in a very few places.





*Each year the Ontario Department of Mines sends geological parties into the field to map specific areas and to prepare reports on the geology of the terrain.*

#### **The Department of Mines**

If, as is suggested, the balance of influence, the centre of population, and the industrial heart of Ontario, and for that matter of all Canada, is destined to move gradually northward, it will be in a very large measure due to the mineral wealth of the Canadian Shield. It is, therefore, fair to ask what the Ontario Department of Mines is doing to promote the growth and development of the industry to which and for which it is responsible.

Among the services which the Department provides for the industry and those whose livelihood is gained through it, might be mentioned those offered by the Assay Laboratories in Toronto and at Cobalt (The Temiskaming Testing Laboratory), and the work of the department's inspection staff charged with the responsibility of seeing that everything possible is done to protect the life and health of the miner. The operation of a rope testing laboratory, in which all cable used for mine hoists must be tested at regular intervals, is one of the functions of the inspection branch.

The work of the geological field parties is of the greatest importance in disseminating knowledge of the rock structure of various

areas. Each year about twelve parties are sent out to make detailed surveys of specific areas. The reports and maps prepared as a result of these surveys form a comprehensive library of the available knowledge of the province, and they are of incalculable benefit to prospectors and others interested in mining development.

As an adjunct to these ground surveys, the department within the last few years has made considerable use of airborne geophysical methods to accomplish the same purpose on a more general scale. The airborne magnetometer can of course chart a much greater area in less time than would be required for a ground survey.

#### **Mining Access Roads**

In 1951 the Department of Mines instituted a program for the construction of mining access roads. As great areas of the north are totally inaccessible except from the air the advantages of such a program to open up potentially valuable territory is self-evident.

The program has been pursued so aggressively that with a total vote over a four year period of only four million dollars, 34 such roads aggregating about 300 miles were built.

Subject to the over-riding principle that the



roads to be built must open up country giving promise to the prospector, the department's policy was always to derive for the province every possible ancillary benefit from each mile of road built. Thus, wherever possible the roads were made to pass through well timbered lands, opening them for harvesting, or through agricultural belts which might be settled and developed. In some cases, notably that of Gogama, towns were given the first road contact with the outside world which they had ever had.

A further principle was followed to see that the roads should open whole regions rather than small areas. The accomplishment of this objective was made easier by the fact that there are literally hundreds of privately-owned bush roads throughout the north, most of them constructed by timber operators. It was found that many of these separate links could be joined so that, with comparatively little new construction, through routes a hundred or more miles in length could be obtained. Thus a

project which is now envisaged, and on which the first steps have been completed, will eventually give the town of Timmins direct access to Highway 17, far to the south.

In exactly the same way, the department acted speedily in 1954 to drive a road through to the Manitouwadge Lake area from Highway 17 at Hemlo. The whole project was completed in three and one-half months in order that no time might be lost in bringing this new and vitally important discovery into full production. With the completion of a further extension on which preliminary work has already been done, there will be a complete loop from Highway 11 to the north through the Manitouwadge field right to Highway 17 and the shore of Lake Superior. Action toward completion of a similar route through the Blind River uranium area was also taken speedily shortly after the value of the area became known.

Canada's two great railway systems saw that no time was lost as they raced to complete the

*The search for uranium proceeds winter and summer in promising areas of Ontario. Here two prospectors with the aid of a Geiger counter seek the strategic mineral through a deep blanket of snow.*

Dept. of Mines





*Three prospectors point out on the Ontario Department of Mines map the area they have staked. With them is the Mining Recorder in the Sudbury office of the Department.*

Dept. of Mines

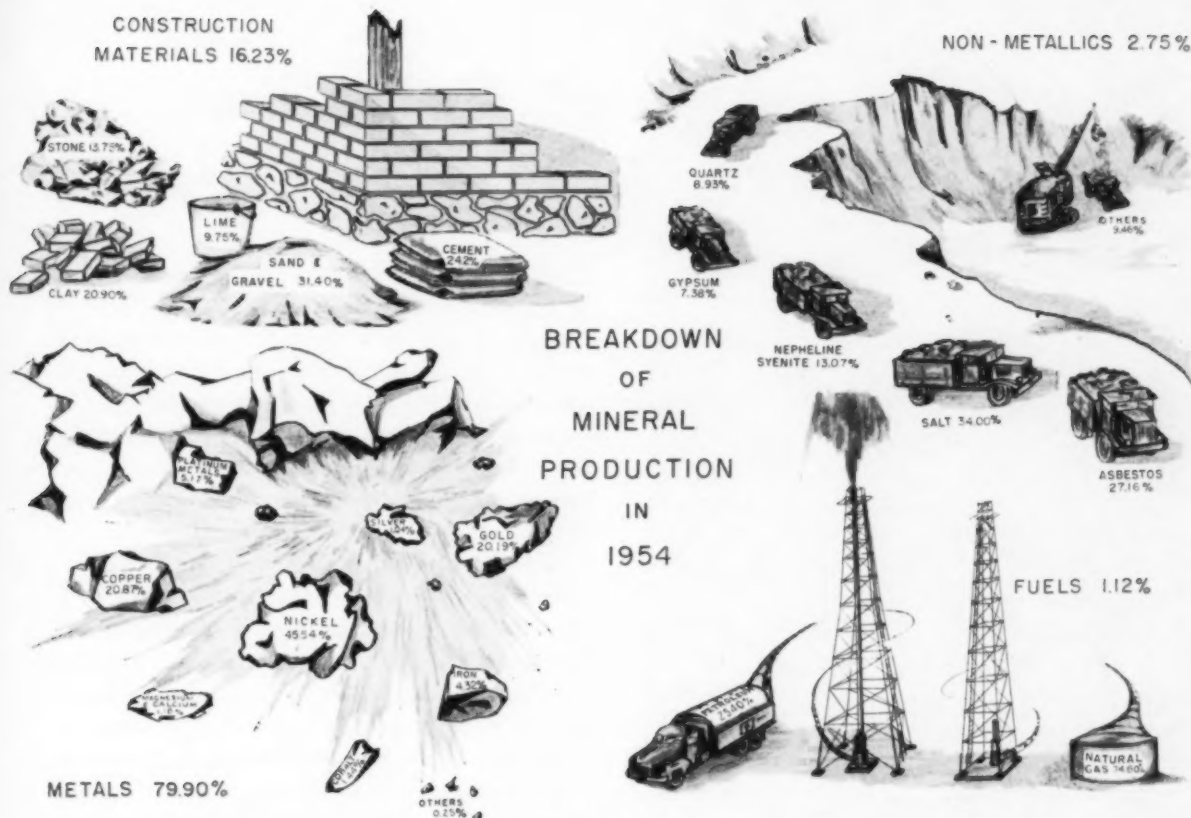
construction of spur lines to serve the mines coming into existence in the Manitouwadge area.

By the end of 1954 the government had come to the conclusion that the program of building access roads in the north was of such importance to the whole province that it should properly come under the direction of the Department of Highways, which naturally, was better equipped to handle such projects than was the Department of Mines. Under the new plan, the intention was to broaden the whole picture so that in addition to the Mines Department, others, such as Lands and Forests, Municipal Affairs, and Planning and Development might all obtain maximum benefit from the program.

It is with very good reason that the eyes of Ontario are turned northward, where substantial businessmen envisage a great industrial empire within the next few years.

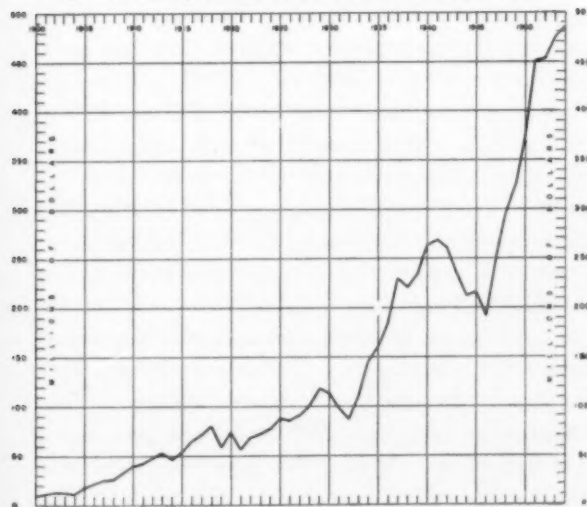
*An indication of the interest shown in the access road construction program of the Ontario Department of Mines. Some of these cars travelled scores of miles with people who wanted to see Mines Minister Kelly officially open the direct link between Matachewan and Kirkland Lake.*



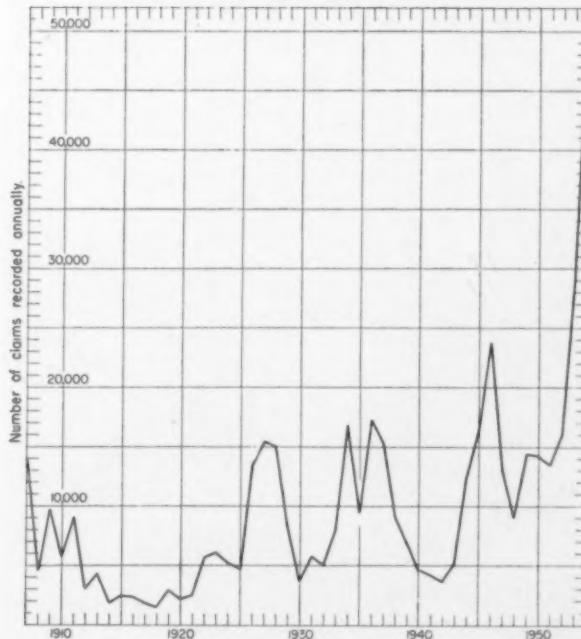


The estimated total value of metals prior to 1891, when the Ontario Bureau (now Department) of Mines was established, was \$9,520,269. No estimate of the output of non-metallics up to that time has been made. Between 1891 and 1899 the total mineral output was \$53,863,555. The over-all total production is now \$7,975,496,906, including the preliminary estimate of \$484,992,796 for 1954. This latter figure is subject to increase as full returns come in.

Graph showing Mineral Production 1900-1954.



Number of claims recorded 1907-1954.





# ***The New Spirit of Religious Architecture in French Canada***

by W. E. GREENING

**T**HE Province of Quebec has long been noted as the home of a unique culture in North America—of a way of life with a distinctive colour and flavour of its own—which forms a striking contrast to the modes of living in the adjacent English-speaking regions of Canada and the United States. Together with Ireland and Spain, it is one of the great world centres of Catholicism. Organized religion has an influence on the daily lives of the people here such as is found in few other parts of the Christian world. This province is also fortunate in possessing a school of native craftsmen—workers in wood, stone and the metals—who are the heirs and the practitioners of techniques which have come down in a direct and unbroken line during three centuries from the France of Louis Quatorze.

During the period of early settlement between 1600 and 1800 when the fleur-de-lis still flew over Montreal and Quebec City, the French Canadians developed original and distinctive styles of domestic and religious architecture which represented a very happy adaptation of the contemporary modes of building of France and Western Europe to North American conditions and the Canadian environment. The parish churches which were

erected during this period and which still stand in the peaceful and other worldly little villages on the Isle of Orleans and in the vicinity of Quebec City are models of simplicity and beauty in the harmony and balance of their lines and proportions and in the rich variety of the wood carvings and sculptures which adorn their interiors.

But during the nineteenth century the prevailing styles of building in Europe and in North America had a corrupting effect upon architecture and design in the Province of Quebec. The builders and the clergy there fell under the influence of the worst elements of the Gothic revival and they produced elaborate and pretentious religious edifices, such as the Basilica in the heart of Montreal, which were lifeless imitations of European models and in which true piety and aesthetic feeling were completely lacking. The interiors of the Quebec Catholic churches, particularly in the small towns and rural parishes, became cluttered with all kinds of over ornate and tasteless bric-a-brac—contorted carvings and saccharine pictures, statues of the Virgin and of the Saints in the worst style of Murillo or Bougereau. The haloes of electric light bulbs and the paper streamers made some of these places, in the words of one critic, look like ornamented Christmas trees. The old spirit of reverence and sincerity disappeared, and the making of Catholic religious ornaments, crucifixes, rosaries, amulets and statuettes became organized on a mass production basis. The hundreds of these articles turned out by French and Italian art firms in Montreal had little or no artistic value. During this period few of the first rate native craftsmen and artisans in French Canada devoted their energies to the field of religious decoration.

It was not until well into the twentieth century that any basic change came in this

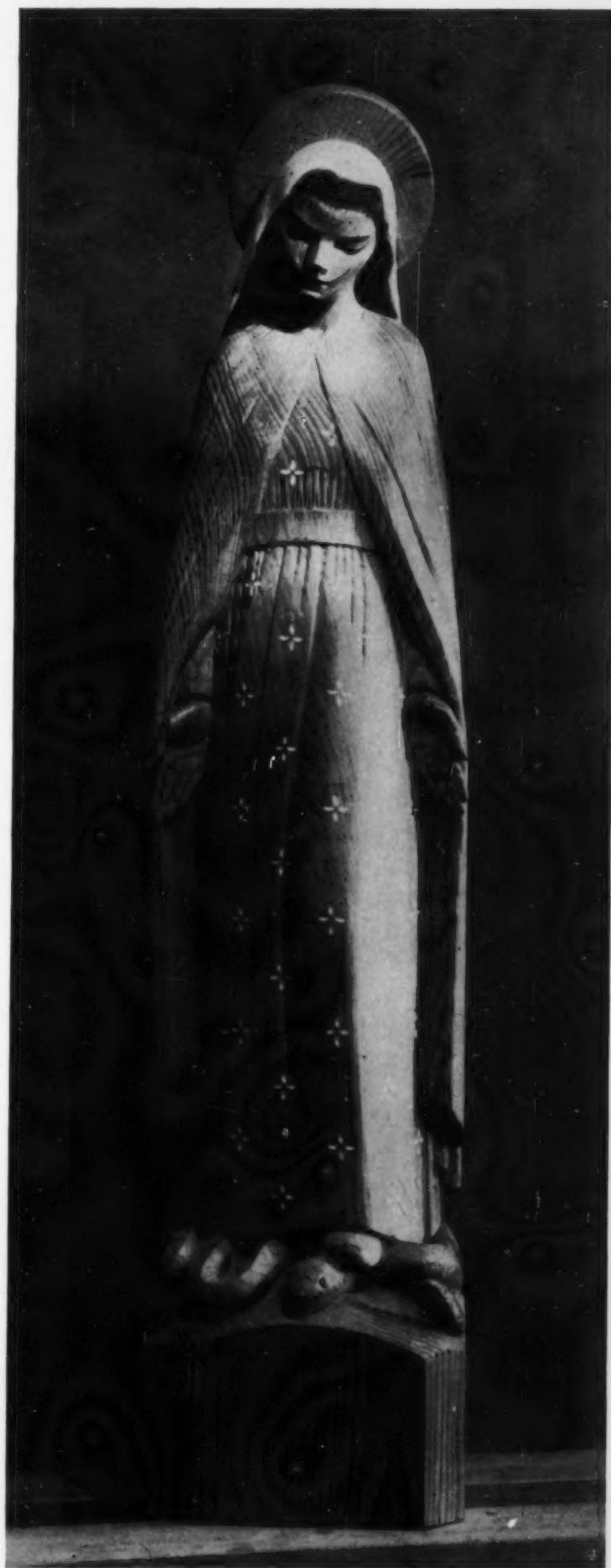
*The chapel at Clermoutier, designed by Père Corbeil, is admirably suited to its surroundings.*



situation. Then the influence of the modern Catholic artistic movements in France and in other European countries made itself felt. In the years following the end of the First World War there had been a strong reaction all over Europe against the frozen formalism and the dead, imitative traditionalism which had been typical of all religious architecture, both Catholic and Protestant, on the Continent during the nineteenth century. A new school of building arose, especially in France and Switzerland, which strove towards a return to greater simplicity and greater spirituality of feeling, and design which would be in keeping with the new twentieth century environment.

These influences came to Canada at the time of the Second World War—an event which had a very fertilizing and stimulating effect upon French Canadian culture because it brought many prominent French artists, scholars and writers as temporary refugees from Nazi tyranny to the banks of the St. Lawrence. Notable in this group was the prominent French Catholic designer and architect, Père Marie Alain Couturier, who had made a name for himself in his native land in connection with the revival of religious art. He is especially well known for the chapel whose construction he supervised at Vence in the South of France and which is adorned with murals, stained glass and sculpture by Matisse, Rouault and other famous modern painters. Père Couturier was not favourably impressed by the state of religious art in the Province of Quebec. He was quite unsparing in his criticism of what he regarded as its commercialism, lack of taste and uninspired vulgarity. Although his strictures caused a good deal of offence and aroused considerable antagonism they were beneficial in drawing attention to this important field of artistic endeavour.

Under these new influences, the higher ranks of the Catholic clergy of the province and the most enlightened members of the laity began to realize that many of their contemporary religious buildings did not come up to the highest standards of architecture and did not reflect truly the religious spirit of French Canadians. The great Catholic orders, such as the Dominicans, the Benedictines and the



*Statue of the Madonna by Sylvia Daoust at Ste. Foy. Carved pine, picked out with colour, it is 4 ft. 4 ins. high.*

Clercs de Saint-Viateur, who have many monasteries, seminaries, houses of retreat, and convents throughout the province, began to take a very active interest in the new movement. Together they tried to raise standards of taste and increase knowledge of architecture among the lower clergy and to persuade them that an aesthetically perfect church or chapel is a most acceptable form of offering to God. They also strove again to enlist in the service of the Faith the talents of different types of master craftsmen. In this campaign they have been aided by the Government of the Province of Quebec which places a strong emphasis on art education in its general program and operates several institutions, such as *l'Ecole du Meuble* in the City of Montreal, where the traditional French Canadian crafts and techniques are kept alive. Among the members of the clergy who have been particularly active in this work are Rev. Julien Déziel, a Franciscan, and Rev. André Lecoutey. The latter is one of the editors of *Arts et Pensée*, an art magazine

published in Montreal which has done much to spread the new ideas.

The result of all of this discussion and activity has been a remarkable change in the general style of Catholic architecture and design in French Canada during the past ten or fifteen years. The chief characteristics of the new style are simplicity, directness, modernity of feeling and complete absence of garish and vulgar ornamentation both in the exteriors and the interiors of the new churches. The naves, choirs, and chancels of most of the churches and chapels which are being erected in the Province of Quebec today are almost devoid of adornment, save where it contributes to the beauty and the effectiveness of the general ensemble. Metal work, carving, and sculpture are used sparingly and generally are confined to the altar and to the *Chemin de la Croix*—or the Road to Calvary—which usually runs in a frieze around the walls. Murals are sometimes used as in the case of the Church at Matane. These buildings have a spare and aesthetic feeling and an austerity which is almost Calvinist in its effect and which expresses well the stern and unbending nature of the Catholicism of French Canada.

There are several new Catholic religious buildings of this type in the region close to Montreal which represent genuine and novel contributions to North American architecture. Among the most notable of these is the novitiate of the Order of Les Clercs de Saint-Viateur which is located in the little city of Joliette about forty miles north of Montreal on the edge of the Laurentian Mountains. Built in a dignified and massive modernized Romanesque style, it was designed by Père Wilfrid Corbeil, a member of this Order, who has studied modern religious art and architecture in both the United States and Europe.

The chapel here is one of the finest modern religious buildings in the whole of Canada. Its stained glass, which was designed and executed by Maurice Plamondon, a native Quebec craftsman has something of the matchless glow and the brilliance of colour which one sees in the windows of the great mediaeval Gothic cathedrals. The iron work of the doors and the



*Interior of the church at Matane, showing part of the mural behind the altar. Inventaire des Oeuvres d'art*





*Notre Dame chapel at Nicolet, by the architect Père Corbeil, is uncompromisingly modern in contrast to the other religious buildings in Nicolet.*

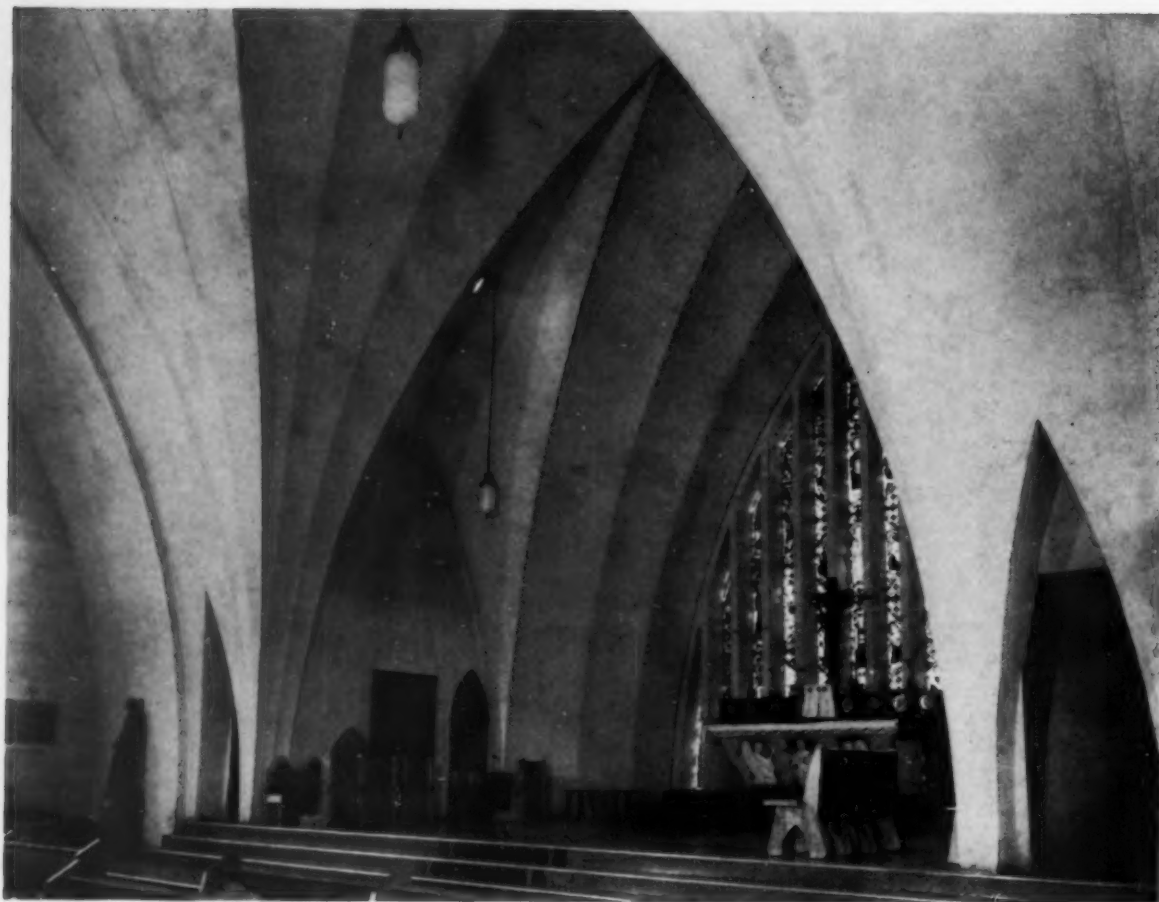
*Inventaire des Oeuvres d'art*

altar, which was also designed by Père Corbeil, has grace, imagination and originality.

Père Corbeil has also been responsible for the execution of other important religious buildings in Quebec. Outstanding is the chapel which he built for the Centre Mariale Canadien in the historic town of Nicolet, about one hundred miles northeast of Montreal on the south shore of the St. Lawrence River. Its daring creativeness shows boldness and originality. The chapel consists of a low, semi-circular one-storey building constructed in a form which suggests the bridge of a ship. Above the chapel rises a lofty monolith of cement surmounted by a cross and fronted by a full length statue of the Virgin. Inside the chapel is a striking altar of native Quebec granite, behind which there is a mural in blue and red displaying various sacred symbols. This shrine, which is a landmark for miles around, makes an unforgettable impression upon the traveller

approaching the town of Nicolet by bus or automobile for the first time. It has become a centre for the cult of the Virgin Mary and already is being visited by hundreds of pilgrims from many regions of North America and Europe every year. In its uncompromising modernity, this chapel forms a remarkable contrast to the other religious buildings in Nicolet—the cathedral, the seminaries and the convents—all of which are built in the traditional French Canadian style.

Another very attractive building, with something of the same modern character, is the chapel of the Collège Bourget of Les Clercs de Saint-Viateur which is located on the slopes of a high wooded hill overlooking the town of Rigaud and the Ottawa River Valley, about forty miles west of Montreal near the Ontario boundary. This chapel contains a very beautiful and expressive series of bronze plaques depicting the Road to Calvary, which was the



*The chapel of the seminary of Les Clercs de Saint-Viateur at Joliette. The building and the iron work of doors and altar were designed by Père Corbeil. The stained glass was designed and executed by Maurice Plamondon.*

*Associated Screen News*

work of another Quebec master craftsman—Albert Gilles of Cowansville.

Undoubtedly, one of the most important examples of modern architecture in the province is St. Benoit du Lac, the monastery of the Benedictine Order, near Magog about eighty miles east of Montreal. The massive buildings are very impressive in their setting of thickly forested hills by Lake Memphremagog. They were the work of Dom Bellot, a Dominican architect who was responsible for the erection of many notable modern religious edifices in western European countries. Saint-Benoit is one of the principal centres in North America for the study of the Gregorian chant and mediaeval church music. Every year many students and lovers of music visit it to enjoy the beautiful singing of its fine choir.

Throughout the province—in the Eastern Townships, the St. Maurice River Valley,

*"Mater Salvatoris", 5-foot mahogany statue by Sylvia Daoust, which can be seen at the left in the chapel above.*



*The buildings of the seminary of Les Clercs de Saint-Viateur at Joliette, north of Montreal,*

Associated Screen News

along the Saguenay and St. Lawrence Rivers—there are many smaller parish churches, chapels, and other religious buildings that reflect the new trends. One such is the new Eglise du Christ Roi in Joliette, notable for its high square bell tower which is separate from the main body of the edifice and for the skilful and unusual arrangement of its windows—long bands of glass which throw the maximum of

light in the direction of the striking altar. Another is the parish church at Ste. Adèle en Haut, a ski resort in the Laurentian Mountains about fifty miles north of Montreal. This church has an extremely attractive façade with a parabolic arch and an allegorical bas-relief over the doors.

As we have said, a number of highly skilled and imaginative craftsmen and artists have

*The Benedictine monastery of St. Benoit du Lac near Magog. The architect was Dom Bellot.*

Quebec Publicity Bureau







*Eglise du Christ Roi in Joliette. One unusual feature is the campanile; another is the arrangement of the windows in the body of the church.*

Architecte-photos

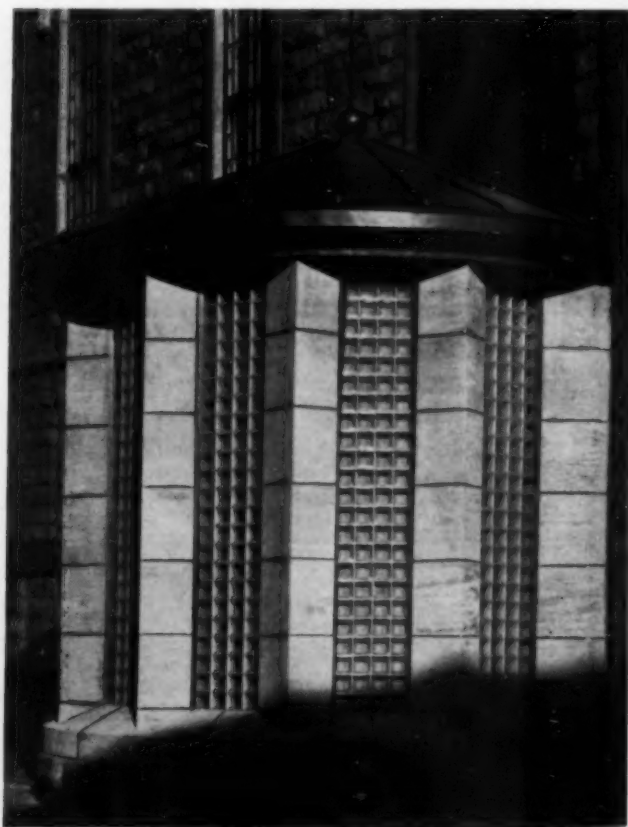
*Interior of the new Joliette church showing the effect of the panel windows.*

Architecte-photos



*The baptistry at Limoilou, built of stone and glass-brick to the plans of Henri Tremblay.*

Inventaire des Oeuvres d'art



become identified with this new architectural movement in French Canada. Outstanding among them is Sylvia Daoust, who is in the first rank among the sculptors of contemporary Canada and who teaches at *l'Ecole des Beaux Arts* in Montreal. Her works have won extensive critical acclaim in many parts of the world, including the United States, England and France, and she has helped in the decoration of many religious buildings in her native province. Her statues of the Virgin and of the Saints, carved in wood and in stone, reveal delicate grace and tender reverence. She is one of the contemporary Canadian artists who is doing something to rescue Christian art from the morass into which it fell during the nineteenth century.

This new architectural movement, part of the general renaissance of the fine arts that has

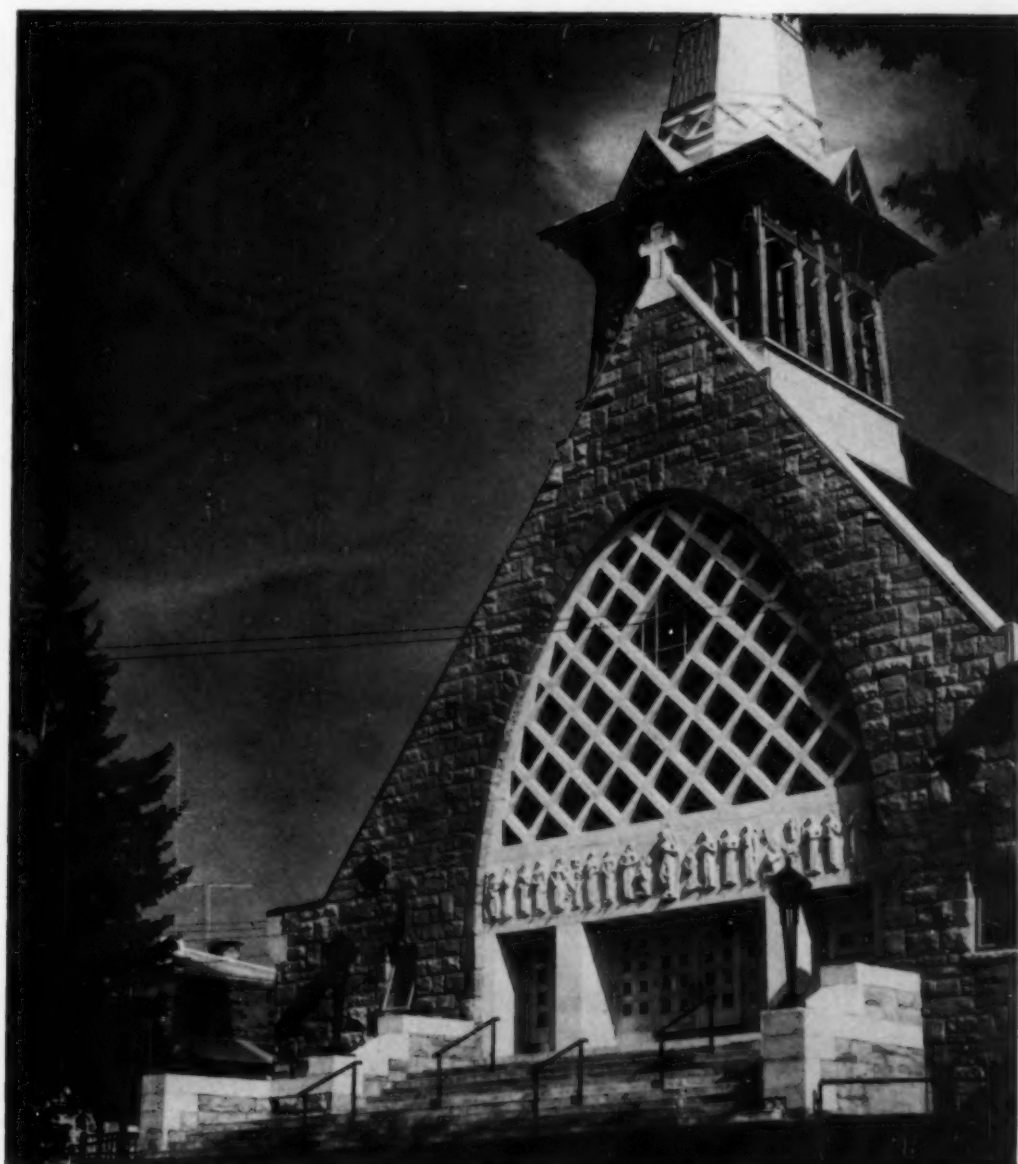


been taking place in French Canada during the past ten or fifteen years, holds rich promise for the future. Its influence may be expected to spread and to affect the standards of architecture, both religious and civic, in all regions of Canada.

*The bas-relief above the doors is a distinctive feature of the new church at Ste. Adèle en Haut, ski resort in the Laurentian Mountains north of Montreal.*

*The photograph above right, shows the simple and effective interior of this church.*

Architecte-photos





*This majestic panorama of mountains and valleys near Banff may be enjoyed from the upper terminal of Mt. Norquay chair-lift. The lift, which has one of the steepest ascents in the world, rises 1,300 feet in a distance of 3,240 feet.*





Contestants in the downhill competition at the Marmot Derby stand waiting their turns.

Alberta Govt.

## Skiing in Alberta

Except where otherwise indicated, photos by Canadian Government Travel Bureau.

**T**HE THREE mountainous national parks of Alberta—Jasper, Banff and Waterton—are known to Canadians from coast to coast and to many outside the country. Most people prefer to visit them in summer, but there are some who go when the formidable Rockies are deep in snow—the indomitable skiers. To them the mountains of Alberta are as Mecca to Mohammedans. It is small wonder that this is so, since ideal conditions for skiing prevail from December to March in most of the mountainous regions, till the end of April in some, and all year round in others. Downhill runs a mile wide and three miles long are common. It is not unusual for snow to lie between 10 and 20 feet deep. And every year there are more lodges providing comfortable accommodation. We present below thumbnail sketches of the best districts and resorts in the province for skiing.

### Banff National Park

**Banff** (4,534 ft.)—Season: November through May. Accommodation: King Edward, Cascade, and Mount Royal Hotels; Mountainholm

Lodge; Bow View Apartments; Charlton's Cedar Court; also rooms in private homes. Facilities: excellent alpine slopes, cleared slopes, championship courses.

**Mount Norquay** (8,725 ft.)—Five miles from Banff. Championship skiing competitions are held here. Facilities: two-mile downhill course for experts, practice slopes and others for less skilled skiers; electric chair-lift; rope tows; ski school. Some slopes are floodlit at night.

**Sunshine Valley** (7,200 ft.)—14 miles from Banff. Facilities: skiing on the tricky slopes of Twin Cairn, Carlyle Ridge and Standish Hump; cross-country tours to Mt. Assiniboine (22 miles); rope tow; ski school; meals and accommodation at lodge.

**Lake Louise Area** (5,050 ft.)—Season: late December to late spring or early summer. Accommodation: Lake Louise Ski Lodge, Mt. Temple Chalet, Skoki Lodge. Facilities: new ski-lift at Mt. Temple near the chalet (5 miles up the Ptarmigan valley); long downhill courses on Drummond and Douglas Glaciers



*In the 150 square miles of Columbia Ice Fields beauty and danger go hand in hand. Unaccompanied skiers may become lost or tumble into a crevasse like this one.*

C.N.R.



*Skiers commence a breath-taking descent in Banff National Park. Within the Park are more organized facilities for skiers than in any other part of the province.*

near Mt. Skoki; practice slopes on Deception Pass; excellent slalom course on Fossil Mountain; guides available for ski-touring; late spring skiing at Pika Peak and Ptarmigan Glacier.

#### **Jasper National Park**

*Jasper* (3,470 ft.)—Season: mid-December to mid-April; all year on glaciers. Accommodation: Astoria, Athabasca, Pyramid Hotels; comfortable chalets and cabins in the mountains for skiers on tour. Facilities: downhill and championship courses; guides for ski tours. One of the best tours is that out from Maligne Lake into Bald Hills and along Skyline Trail. It takes two to three days.

*Whistler Mt.* (8,085 ft.)—About 3 miles from Jasper. Facilities: excellent downhill courses, the best being a racing course  $3\frac{1}{2}$  miles long; beginners' slope; new electrically operated ski-tow; skiing classes; chalet owned by Jasper Ski Club Ltd. Several slopes are floodlit for night skiing.

*Marmot Basin* (6,800 ft.)—11 miles from

Jasper. An annual international competition, the Marmot Derby, is held here. The Basin is unique because it is sheltered against the high country winds. Facilities: excellent five-mile downhill trail; snowmobile; log chalet with cooking stove.

*Columbia Ice Fields*—70 miles south of Jasper, dominated by Mt. Snow Dome (11,340 ft.). In midsummer a downhill competition is held here. The road is not open in winter. Amateur skiers should be accompanied by guides or expert skiers. Facilities: snowmobiles; modern chalet for which reservations are necessary in advance.

#### **Waterton Lakes National Park**

*Cameron Lake Area*—near the town of Waterton. May 24th is the date of the annual Waterton Lakes Spring Ski Tourney. Skiing almost all year round, starting in October. Facilities: downhill courses; long natural slopes in Boundary Creek Valley. For information about accommodation write to Waterton Ski Club, Waterton, Alta.



*Evergreens etched in sunlight and bowed beneath heavy burdens of snow assume fantastic forms which arrest the eye of the beholder and make him momentarily unmindful of the impersonal grandeur of Alberta's mountains.*





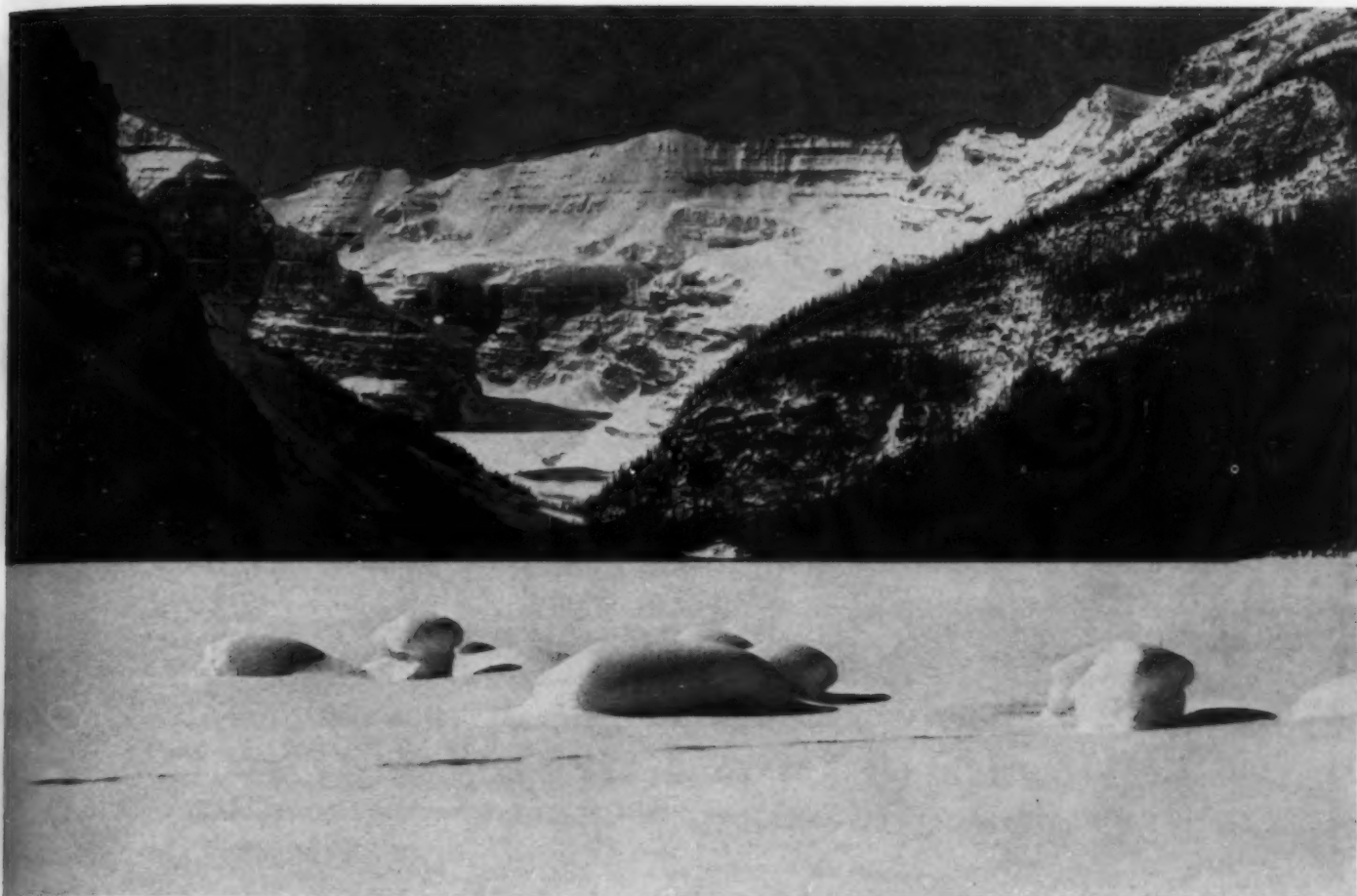
*This tree dotted slope is at Marmot Basin near Jasper. The 4 to 6 square miles of sheltered terrain in the Basin is expected to become one of Alberta's finest ski resorts.*

Alberta Govt.

*This is how it is done. Go thou and do likewise. One of the province's expert skiers, a native of Switzerland, demonstrates the style that has won giant slalom events.*

Alberta Govt.





*The delicate aqua tints of Lake Louise have disappeared till spring. Meanwhile skiers disport themselves on neighbouring mountain courses or tour the beautiful countryside.*

*An exhilarating sight after hiking 22 miles across Banff National Park from Sunshine Village is the peak of Mt. Assiniboine. An ambitious skier appears to have staked a claim.*





*An aerial view of Yangu in early June, 1954.*

## ***New Hope in a Korean Valley***

by GORDON C. MERRILL

Photographs from transparencies by the author.

**T**HE YANGU VALLEY straddles the 38th parallel. Three years of bitter fighting in this rugged mountain country to the northeast of Seoul destroyed many agricultural communities. Men who fought in this part of Korea will long remember "Heartbreak Ridge", and "The Punchbowl". But the land does not seem to have a long memory. Land hungry Korean farmers began to pour into the Yangu valley in March of 1954, and within ninety days many of the scars of war were removed from the landscape. The Yangu valley is typical of the rural areas of Korea that suffered war damage, and the events and methods of reconstruction described in this article are of wide application in Korea today.

Yangu is an agricultural town. Before the war its five thousand inhabitants laboured in the rice paddies on the bottomland, and raised cabbages, white and sweet potatoes, daikon or Japanese radish, and fruit on the lower slopes of the surrounding hills. In 1951, after spring planting and before the harvest, advancing armies drove out the farmers. Political leanings dictated the direction of withdrawal, and the majority of the people moved to the south to swell the city populations of Taegu and

Pusan. The Yangu valley became a military thoroughfare, and remained one for two years. At the time this area was opened for resettlement last March, there was no trace of the former town, the orchards had fallen victim to artillery fire and tank movement, and the rice paddies were broken and overgrown with weeds. In characteristic fashion the returning farmers gave first attention to the land, and then they turned to the task of rebuilding the town.

The people of Yangu brought no small measure of skill to the rehabilitation of their agricultural land. Rice culture demands a high degree of organization and co-operation of its labour force. The need is even greater when the starting point is a former battlefield. Koreans of both sexes and all ages, "Poppasan", "Mom-masan", and "Babysan" alike, spent the early weeks of resettlement at labour in the fields. The organization of work was never too apparent, but the results were impressive. The first need was for seed beds. Early in April enough rice paddies and irrigation ditches had been built to permit the sowing of seed. The rice seedlings remained in the beds for at least six weeks, and being closely spaced, gave



*Levelling the rice  
paddies, early  
June, 1954.*



a deep green colour to the landscape. Work on the land continued at a rapid pace, in order to have paddies in great number ready for the transplanting of the rice.

Western and oriental methods and implements were both used in the preparation of the land. Sympathetic army commanders found it possible to release a bulldozer now and then for work in the building of paddies. Nearby human labour could be seen busy at the same task. Heavy applications were made of chemical fertilizers produced in the United States, while the farmer worked the land as did his ancestors of centuries ago, with wooden plow and rake, and sleek-haired Korean oxen. But western technology had little to offer in the great task of transplanting. Carefully and laboriously each seedling was removed from the seed bed and transplanted in the paddies. Here was a familiar job for the farmer, and a happy one. At midday the women and children would arrive at the paddies carrying hot food, and work would cease for an hour. Transplanting continued until the middle of June. Attention was then given to the important task of vegetable production. Dry fields were made ready and planted to cabbage, leeks, sweet and white potatoes. After two years of suffering and homelessness, and much labour, the people of Yangu were back at the stage of 1951. But in 1954 they could look forward to a harvest, instead of trampling armies.

South Korea is an agricultural country. It has few large cities, but many small agricultural towns and villages. The westerner takes a critical eye and a sensitive nose to the orient. Invariably he finds the rural landscape more pleasing than the urban. Yangu is no exception. Indeed, it suffers from a comparison with other Korean agricultural towns which were undamaged by the war. For Yangu lacks some of their points of charm, such as the scattered plantings of poplar and pine, the winding footpaths knitting the town together, and the occasional upperclass home of superior design and attractive appearance. But Yangu is typical of the many agricultural towns springing up in the areas of former fighting.

During the first five months of resettlement more than one thousand houses were built in Yangu. In our society this would represent a golden opportunity to the contractor. In Yangu it meant work for all the members of the family, for both building skills and materials are local in origin. Almost all the houses exhibit the same basic pattern of construction, a rectangular floor plan providing for a kitchen and one or two bedrooms. The lumber used is produced locally from pines cut on the neighbouring slopes. The skeleton of the house is of light construction. Small branches of pine are interlaced between the structural timbers to provide a rough matting for the outside covering of plaster. Clay is mixed with small amounts



*Preparing rice seedlings for transplanting. Raising a rice crop was first step in rehabilitation.*

*The laborious task of transplanting the rice seedlings, still most efficiently done by hand.*





*One of the houses that were quickly built in the resettlement of Yangu.*

*The Korean way of mixing plaster, which consists of clay with a small amount of straw and sawdust.*







*Im Yang Joon is the oldest and wisest man in Yangu.*

of straw and sawdust to produce the plaster, the mixing of which is a sight to behold. It is done by marking time barefoot in a sea of mud. A common sight is an entire family tramping in such a mixture. Tall grass growing along the banks of the river is used as thatch for the roof. The finished product is not attractive by our standards of beauty, nor is it considered completely satisfactory by the Korean. After a few good harvests it will be strengthened structurally, and a tile roof added. But in the meantime it is home, and it promises some measure of comfort for the coming winter. The bedroom of this simple Korean house is heated by flues beneath the floor. This modern method of heating is more than one thousand years old in Korea.

Not all the features of home and town are conventional in Yangu. Poverty and ingenuity combine to produce some interesting departures from the normal in house construction. Thousands upon thousands of old tin cans have been opened out, and overlapped to form sheets of roofing material. The use of beer and milk cans in the sheeting adds a touch of colour to such a roof. The Koreans have found that used shell casings are excellent for the building of chimneys, and such chimneys are very common in Yangu. The town has one feature entirely unique in Korea, a windmill. It was built by American forces and donated to the

people of Yangu. The children thought at first that the windmill was designed to keep evil spirits away. It is idle most of the time through the absence of wind. In answer to a direct question as to its usefulness, Im Yang Joon, the oldest and wisest man in Yangu, stated with a twinkle in his eye, "Our country is known as the Land of the Morning Calm".

Much could be written about the splendid work being done in the rehabilitation of South Korea by various organizations within United Nations. Financial and technical assistance is forthcoming in generous measure. The need is great. Many of the Korean farmers returning to Yangu lost all of their possessions during the war. They are being provided with food, animals in small number, and seed for planting. Army engineering units are erecting many churches and schools in areas of war damage. The success of such relief measures depends upon the efforts of the recipients. The people of Yangu and other Koreans like them are worthy of such assistance, for they are tugging at their own bootstraps.

*The first windmill in Korea, at Yangu. It is seldom stirred by the wind.*



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Volumes XLVIII and XLIX

according to the classification of J. L. Robinson

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## THE TRAVEL CORNER

### Along the Trail of '98

Whether one remembers the days of the Yukon gold rush or not, in this era of jet aircraft and projected flights to the moon there is something about the Trail of '98 that evokes nostalgia. Today capital is being made of nostalgia, as of many other intangibles. And one of the more unusual enterprises of this kind in Canada is the series of summertime Klondike tours offered by Canadian Pacific Airlines.

The Canadian vacationer in quest of novelty within the borders of his own country surely need look no further. Each of the four C.P.A.L. tours is a neat little parcel of past and present, and of wilderness and civilization. The tours vary in length from eight to nineteen days but all include Whitehorse and Dawson City. The longer ones extend to various places in Alaska.

On the eight-day tour one starts out from Vancouver or Edmonton in a modern airliner, a pressurized

Convair that travels at nearly 300 miles per hour over the Rockies to Whitehorse in the Yukon Territories. At Whitehorse one boards the "S.S. Klondike", an old stern-wheeler similar to those used by the sourdoughs who followed the Trail of '98, and commences a cruise down the Yukon River to Dawson City. (The steamer was reconditioned a year ago and has been made comfortable for passengers. Among its refinements are an attractive lounge, a bar and a high fidelity record-player.)

The cruise down-river from Whitehorse to Dawson City takes two nights and a day. However, distinction between night and day here during summer is mere conventionality, for there is light almost round

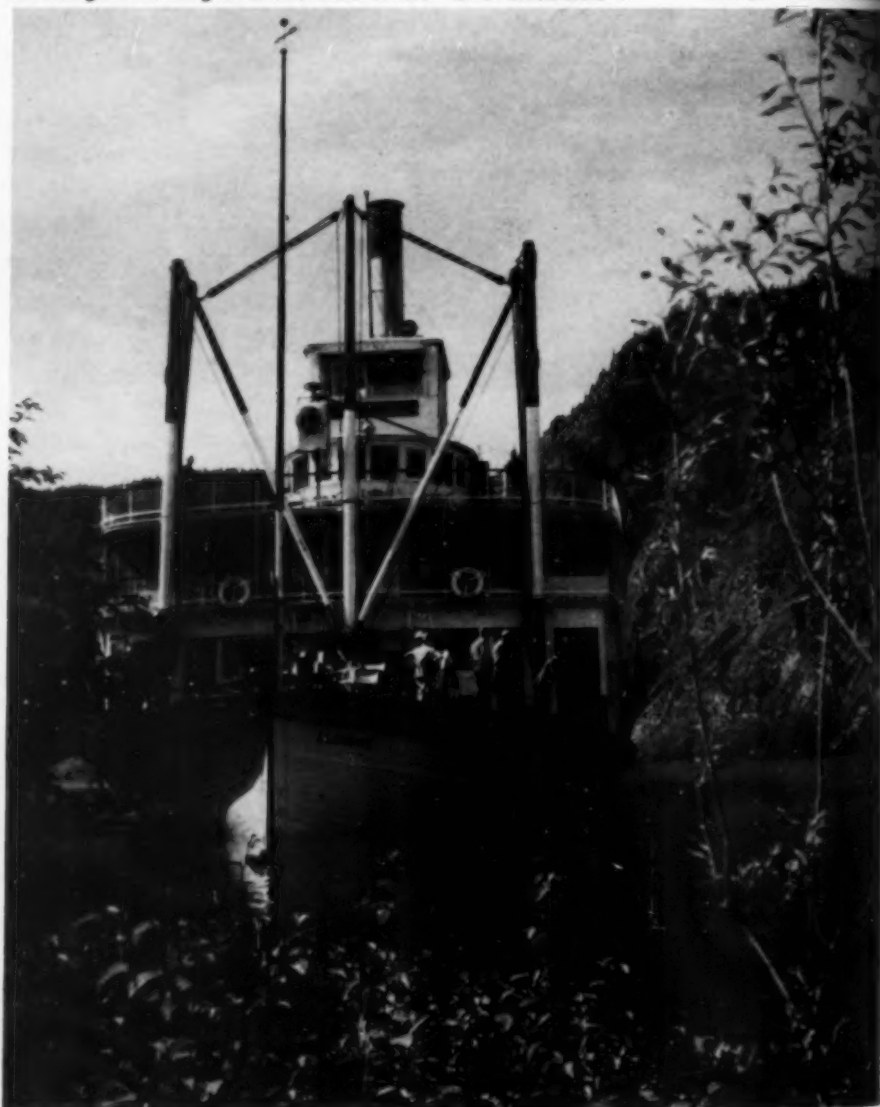
the clock. The passage is an interesting one between rocky cliffs, through rapids and narrow channels. At intervals along the shore may be seen crumbling abandoned "port cabins" used by the men who participated in the frantic rush to the Klondike and Eldorado Creeks in search of gold.

Dawson City no longer is the rowdy community of 40,000 people that it once was; for when the feverish excitement about prospecting subsided thousands departed. Today it has about 500 inhabitants. It is a slumbrous town which cherishes a few mementoes of its gaudy past. Two of these are sagging ghost-ridden buildings that used to ring with music, laughter and the boisterous celebrations of prospectors on a fling—the Royal Alexandra Hotel, where the Flora Dora girls attained dubious glory, and the Nugget Dance Hall in which Douglas Fairbanks Senior and other famous troupers performed. Among the various excursions ar-

(Continued on page VIII)

Passengers fishing over the side of the "S. S. Klondike".

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(Continued from page VI)

ranged for guests of C.P.A.L. is one out to Klondike Creek. There may be observed in operation the large dredges and other pieces of commercial mining machinery that have supplanted the crude shovels and pans of earlier gold miners.

The return trip from Dawson City up the river to Whitehorse takes four days; the remaining day of the tour is spent in Whitehorse. The little river steamer does not rush toward its destination like an ocean liner. It churns along at its own pace and even stops to permit passengers to fish for trout or whitefish and to experiment at panning for gold. On board there are organized recreational pastimes for those who wish them, chairs on deck for those who prefer to laze in the sun. The tour is given its final touch of sentimentality by a pause on the shore of Lake Laberge at the spot where Sam McGee is supposed to have been cremated. From Whitehorse one is flown back to Vancouver or Edmonton by C.P.A.L.

Arrangements to take the short tour outlined above or any of the three others must be made well ahead of time. Meals aboard the aircraft and steamship, and luncheon at Whitehorse are included in the rates; others are extra. Full details are given in a brochure published by Canadian Pacific Airlines. It also describes optional routes available on all of the tours. On the longer tours into Alaska one travels by plane, train and steamer. Flights are made with Wien Alaska Airlines.

The first three tours begin with the river cruise to Dawson City.

Rates are as follows:

*Tour I*—(8 days)—\$390.00.

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*Tour IV*—(19 days)—\$675.45. By plane from Vancouver to Ketchikan, Petersburg and Juneau with stopovers at each; then to Haines and Skagway; from the latter to Whitehorse to join the cruise to Dawson City; afterward by plane from Dawson City to Fairbanks; then to McKinley Park and Anchorage; by plane to Vancouver or Seattle.

(Continued on page X)



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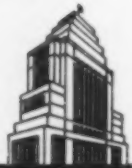
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**EDITOR'S NOTE-BOOK**

L. Carson Brown (*Ontario's Mineral Heritage*), a journalist of wide experience, is director of publicity for The Ontario Department of Mines.—W. E. Greening (*The New Spirit of Religious Architecture in French Canada*) is a free-lance writer who has made a special study of the Province of Quebec both for articles and for broadcast subjects.—Gordon C. Merrill (*New Hope in a Korean Valley*) is lecturer in geography at Indiana University. As peripatetic instructor for the University of California in its Far East Extension Program during 1953-4 he spent nine months in Korea.

\* \* \*

(Continued from page VIII)

Readers will recall that in our December, 1954, issue we wrote about Florida and described various cities and resorts in that State. We have been taken to task by a prominent and loyal citizen of Palm Beach for mentioning only the rates for the most luxurious and exclusive hotels there and so conveying the impression that there is no accommodation except for those of great wealth. We had no intention of misleading anyone. We hasten to assure all interested parties that at the fabulous Beach even during "the season" very decent double rooms (European Plan) may be obtained for as little as \$12 a day.



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